

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following summaries relating to the general weather and crop conditions are furnished by the directors of the respective sections of the Climate and Crop Service of the Weather Bureau.

[Temperature is expressed in degrees Fahrenheit and precipitation in inches and hundredths.]

Alabama.—The mean temperature was 62.7°, or 1.2° below normal; the highest was 92°, at Evergreen on the 1st, and the lowest, 31°, at Ashville and Valley Head on the 15th. The average precipitation was 1.04, or 1.65 below normal; the greatest monthly amount, 3.35, occurred at Camp Hill, and the least, 0.21, at Selma.

Conditions, as a whole, were generally favorable for maturing and harvesting staple crops, though slightly damaging frosts occurred in north-central counties on the morning of the 15th. Almost uninterrupted sunshine during the latter half of the month. Fall seeding backward, but well under way at the close of the month.—*F. P. Chaffee.*

Arizona.—The mean temperature was 67.0°, or 1.6° above normal; the highest was 107°, at Mohawk Summit on the 3d, and the lowest, 24°, at Prescott on the 29th. The average precipitation was 0.92, or 0.15 above normal; the greatest monthly amount, 2.56, occurred at Bisbee, while none fell at Aztec.

Late crops are maturing under favorable conditions in the San Pedro Valley, and the soil is in fair condition for seeding. In other agricultural districts farming operations are backward on account of deficient supply of water for irrigation, and little plowing or seeding has been done.—*Wm. G. Burns.*

Arkansas.—The mean temperature was 63.7°, or 1.2° above normal; the highest was 95°, at Oregon and Rison on the 1st and at Texarkana on the 2d, and the lowest, 27°, at Pond on the 14th. The average precipitation was 2.07, or 0.67 below normal; the greatest monthly amount, 5.03, occurred at Warren, and the least, 0.53, at Hardy.

The weather was generally favorable for cotton picking; this work progressed rapidly, and by the end of the month the bulk of the crop had been gathered. Many fields had been picked clean with the first picking; others had been gone over the second time, while still others had been picked over the third and last time. Very few of the young bolls had matured, and there was practically no top crop. Corn had all been gathered and housed, except some very late planted in a few localities in the northwest section, and that was maturing very slowly. The crop generally was very light, in some sections being a total failure. Although conditions were generally unfavorable for seeding and germination of fall grain, on account of the almost total absence of precipitation, considerable fall plowing and seeding had been done.—*Edward B. Richards.*

California.—The mean temperature was 63.2°, or 2.4° above normal; the highest was 112°, at Salton on the 19th, and the lowest, 10°, at Bodie on the 28th. The average precipitation was 1.50, or 0.32 above normal; the greatest monthly amount, 5.71, occurred at Auburn, while none fell at 6 stations.

Unusually high temperatures in the central coast district on the 10th, 11th, and 12th, and in Southern California on the 21st; crops were not injured. The heavy rains toward the close of the month slightly damaged grain, hay, and beans, but raisins were not injured, as ample warnings had been given. Fires damaged timber and grazing lands.—*Alexander G. McAdie.*

Colorado.—The mean temperature was 49.6°, or 2.6° above normal; the highest was 89°, at Lamar on the 1st, and the lowest, 5°, at Breckenridge on the 31st. The average precipitation was 0.60, or 0.51 below normal; the greatest monthly amount, 1.81, occurred at Ruby, while none fell at Hugo and Las Animas.

The weather conditions were ideal for the ripening and gathering of outstanding crops. In the few localities favored with rainfall a large acreage was plowed, but, as a rule, preparation for next year's crops is not as far advanced as usual, even though many fields were irrigated to facilitate the work. Lack of precipitation also materially interfered with seeding and germination. In localities the needed moisture was obtained by irrigation, but over large areas the grain is not yet up, and the condition of wheat and rye, as a whole, is below the average. At the close of the month potato digging was still under way, and, owing to a decided increase in the acreage and a scarcity of help, two-thirds of the sugar-beet crop was still in the field.—*F. H. Brandenburg.*

Cuba.—The mean temperature was 78.2°, or about normal; the highest was 96°, at San Cayetano on the 1st, and the lowest, 60°, at San Cayetano on the 15th and Santa Clara on the 9th. The average precipitation was 8.04; the greatest monthly amount, 20.81, occurred at Soledad (Guantanamo), while none fell at Providencia (Guines).

The temperature decreased gradually throughout October and conformed quite closely with normal October weather. Along the southern coast from Manzanillo westward rainfall was comparatively light.

In the Guantanamo and Santiago de Cuba districts it was exceptionally heavy, the monthly fall at some places exceeding 20 inches, the greater portion of which occurred during the prevalence of the barometric depression that dominated the weather of the eastern end of the island from the 13th to the 15th (at Guantanamo 17.84 inches fell within twenty-four hours on the 14-15th). In Pinar Del Rio during the latter half of month good progress was made with tobacco transplanting, the weather admitting of field work and also being favorable for the growth of seed beds. In northern Santa Clara the frequent rains were very injurious to seed beds and rendered the preparation of tobacco lands impracticable. In other tobacco sections crop preparations and seed beds were favored by the weather during the greater part of the month. Canes made good advancement, both new plantings and the maturing crop. In northern Santa Clara, however, field work was greatly interrupted by rains, and lowland canes were injuriously affected, to a varying extent, by an excess of moisture.—*W. B. Stockman.*

Florida.—The mean temperature was 72.2°, or 1.0° below normal; the highest was 94°, at Sumner on the 1st, Nocatee on the 12-13th, and at Fort Meade on the 13th, and the lowest, 39°, at Wausau on the 15th. The average precipitation was 1.85, or 2.41 below normal; the greatest monthly amount, 7.08, occurred at Jupiter, and the least, trace, at Quincy and Waukeenhah.

The month was the driest October on record. Cotton picking advanced rapidly and conditions were favorable for harvesting corn and minor crops. Cane and sweet potatoes did fairly well. Citrus fruits colored rapidly. Pineapples made good progress. At the close of the month rain was needed over all sections except portions of the south-east coast.—*F. G. Tingley.*

Georgia.—The mean temperature was 63.0°, or 1.1° below normal; the highest was 92°, at Fitzgerald, Maury, and Waycross on the 1st, and the lowest, 32°, at Ramsey on the 15th. The average precipitation was 1.07, or 1.40 below normal; the greatest monthly amount, 4.08, occurred at Waycross, and the least, trace, at Naylor.

The weather of the month was ideal, the leading features being the very light precipitation, the large number of clear days and abundant sunshine, and the generally uniform temperature. There were but three cloudy days and three days with rain. These conditions were eminently satisfactory for crop interests, and harvesting was brought to a close with hardly the loss of a single day's work. The only detrimental factor in the weather was in connection with fall plowing and seeding, which could not be successfully prosecuted owing to the dryness of the soil. Cotton made a decided improvement and the bulk of the crop was saved in excellent condition.—*J. B. Marbury.*

Idaho.—The mean temperature was 51.0°, or 4.3° above normal; the highest was 90°, at Garnet and Fayette on the 2d, and the lowest, 10°, at Chesterfield on the 18th. The average precipitation was 0.96, or 0.60 below normal; the greatest monthly amount, 2.03, occurred at Albion, and the least, 0.12, at Downey.

Unusually high temperature prevailed, and the mean temperature for the State was 2.4° higher than the highest mean temperature heretofore recorded for October. There was a large deficiency of precipitation, and an unusually large number of clear days. No storms of importance occurred, but on the 29th a brisk to high wind extended to all parts of the State. A rather severe earthquake shock occurred at Paris, Idaho, on the 23d. The weather conditions were especially favorable for active seeding of wheat, fruit tree planting, and placer mining.—*S. M. Blandford.*

Illinois.—The mean temperature was 56.8°, or 1.8° above normal; the highest was 92°, at Centralia, Cobden, and Greenville on the 1st, and the lowest, 21°, at Streator on the 18th. The average precipitation was 1.96, or 0.34 below normal; the greatest monthly amount, 5.45, occurred at Raun, and the least, 0.61, at Antioch.

The weather of October was very favorable for fall farm work. Corn matured quite rapidly, and almost the entire crop was ready for husking by the end of the month. The dry weather which prevailed during the greater part of the month caused the ground to become hard and difficult to plow in many places. Fall seeded grain has done fairly well. The good rains which occurred shortly before the middle of the month were of great benefit to early sown grain, but the weather has been too dry since that time for the proper germination and growth of late sown grain.—*M. E. Blystone.*

Indiana.—The mean temperature was 55.8°, or 1.2° above normal; the highest was 90°, at Prairie Creek on the 1st, and the lowest, 22°, at Winamac on the 5th. The average precipitation was 3.34 or 0.86 above normal; the greatest monthly amount, 7.08, occurred at Topeka, and the least, 0.60, at Vevay.

The month was unusually favorable for farming interests. Between the 3d and 5th nearly all stations reported frost, and many reported temperatures below freezing, and during the 17th and 18th a moderate cold wave passed over the State, producing temperatures below freez-

ing in practically all sections. At the end of the month, corn husking was well advanced; wheat had nearly all been sown, and most of it was up and looking well; apples were nearly all gathered and fall pastures were good.—*W. T. Blythe.*

Iowa.—The mean temperature was 54.2°, or 4.0° above normal; the highest was 88°, at Elkader on the 23d, and the lowest, 20°, at Dows on the 3d. The average precipitation was 1.98, or 0.30 below normal; the greatest monthly amount, 4.23, occurred at Thurman, and the least, 0.45, at Davenport.

The month was warm, and, except in portions of the southeastern and eastern counties, the moisture was ample for germination and growth of fall grain and to facilitate fall plowing. The latter half of the month was very favorable for cribbing corn, plowing, and general farm operations. Pastures made good growth, and, except in limited dry area, fall grain made vigorous growth during the month.—*John R. Sage.*

Kansas.—The mean temperature was 60.1°, or 5.3° above normal; the highest was 97°, at Moran on the 6th, and the lowest, 21°, at Achilles on the 17th. The average precipitation was 1.93, or 0.11 above normal; the greatest monthly amount, 6.30, occurred at Hutchinson, while none fell at Scott and only a trace at Lebanon.

Warm, fine weather, specially valuable for maturing and gathering forage crops, for pastures, and for growing wheat and rye. Some late corn, kaffir, and sorghum were injured by frost. Large acreage of wheat sown, mostly up and growing well; some being pastured. Apples large crop, good quality. Alfalfa has yielded well, the fifth crop being gathered in some counties. Some damage to sugar beets by hail in Hamilton County.—*T. B. Jennings.*

Kentucky.—The mean temperature was 58.1°, or 0.8° below normal; the highest was 93°, at Greensburg on the 11th, and the lowest, 25°, at Loretto on the 18th. The average precipitation was 1.57, or 0.53 below normal; the greatest monthly amount, 6.05, occurred at Paducah, and the least, 0.19, at Catlettsburg.

The dry, moderately warm weather during the month was very favorable for securing late crops. The lack of rainfall interfered with wheat sowing in some localities; that sown earlier made fair advancement, but generally needed more rain. Tobacco cured nicely and fall grazing was good. Corn shucking nearly completed, yield poorer than anticipated. Farm work well up.—*H. B. Hersey.*

Louisiana.—The mean temperature was 67.1°, or 0.5° below normal; the highest was 96°, at Minden on the 2d, and the lowest, 35°, at Plain Dealing and Robeline on the 14th. The average precipitation was 2.29, or 0.77 below normal; the greatest monthly amount, 5.19, occurred at Covington, and the least, 0.65, at Cheneyville.

With the exception of showery weather during the early part of the second decade, the weather throughout the month was exceptionally favorable for cotton picking. Frost occurred over the northern and central portions of the State toward the close of the second decade and damaged cotton to some extent. Picking was pushed vigorously, and in many places was about completed at the close of the month. Labor was scarce in a few localities. Reports from some localities state that the yield was about the average or better than anticipated. The crop as a whole was below the average, and in some places was very light. The weather has been admirably suited to the development of the sugar cane crop. Grinding commenced about the middle of the month, and was soon general. The yield, both in tonnage and sugar content, was reported satisfactory. Rice was generally housed in good condition. The crop was, as a rule, good. Corn gathering made good progress. The yield, while about an average in some localities, was generally below the average, and was very light in some places.—*J. M. Cline.*

Maryland and Delaware.—The mean temperature was 54.9°, or 0.9° below normal; the highest was 92°, at McDonough, Md., on the 13th, and the lowest, 16°, at Deer Park, Md., on the 24th. The average precipitation was 1.14, or 1.88 below normal; the greatest monthly amount, 2.27, occurred at Milford, Del., and the least, 0.21, at Boctcherville, Md.

The dry, open weather was extremely favorable for the completion of the corn harvest and for the seeding of winter grain, but the large deficiency in moisture was greatly against the proper germination of wheat. Early sown wheat received enough rain to bring it to a good stand, but late sown had not sprouted to any extent at the close of the month. Grass suffered some for want of rain, but pasturage was good in most districts. The corn crop is a large one, and is saved in fine condition. Husking advanced slowly during the month.—*Oliver L. Fussig.*

Michigan.—The mean temperature was 49.6°, or about normal; the highest was 86°, at Cheboygan and Mio on 30th and at South Haven on 31st, and the lowest, 7°, at Humboldt on the 18th. The average precipitation was 3.24, or 0.42 above normal; the greatest monthly amount, 7.77, occurred at Whitefish Point, and the least, 0.70, at Birmingham.

The weather conditions during October were generally very favorable to field operations, and in most counties sufficient rain had fallen to nicely germinate winter wheat and rye. Corn husking and potato digging advanced rapidly during the entire month; corn and sugar beets were generally very good crops, but late potato yields were only fair. Farmers as a rule have been sowing their wheat and rye much later than usual, and consequently very little complaint of the hessian fly had been heard at the close of the month, because wheat had hardly advanced far enough to enable the fly to begin its work.—*C. F. Schneider.*

Minnesota.—The mean temperature was 49.2°, or 3.0° above normal;

the highest was 86°, at Willow River on the 21st, and the lowest, 18°, at Pokegama Falls on the 27th. The average precipitation was 1.86, or 0.50 below normal; the greatest monthly amount, 9.56, occurred at Bemidji, and the least, 0.35, at Blooming Prairie.

Corn husking and shredding progressed rapidly during the favorable weather. The fall sown rye and wheat in the small areas in which they are seeded were doing well. Hardy vegetation continued green in the south all through the month.—*T. S. Outram.*

Mississippi.—The mean temperature was 64.4°, or 0.3° below normal; the highest was 93°, at Jackson on the 2d, and the lowest, 30°, at Aberdeen on the 15th. The average precipitation was 1.55, or 0.78 below normal; the greatest monthly amount, 3.85, occurred at Brookhaven, and the least, 0.15, at Okolona.

The weather during the month was very favorable for gathering crops. The rainfall nearly all occurred from the 8th to the 12th, inclusive, and did but little damage to open cotton. Several light frosts were observed over the northern and central counties from the 14th to the 19th, but did slight injury to vegetation. Cotton picking advanced rapidly, and at the close of the month the crop was about three-fourths picked. The yield was very light in the northern part of the State, but fair south, with about an average crop in some of the southwestern counties. Corn gathering was about completed, with a light yield, although sufficient for home consumption in many counties. Fall crops were generally yielding well.—*W. S. Belden.*

Missouri.—The mean temperature was 60.0°, or 2.9° above normal; the highest was 96°, at Appleton City on the 1st, and the lowest, 24°, at Ironton on the 5th. The average precipitation was 1.67, or 0.82 below normal; the greatest monthly amount, 3.93, occurred at Rockport, and the least, 0.47, at Willow Springs.

The month was exceptionally pleasant throughout the State and favorable for the gathering of outstanding crops, but in most sections grasses and fall sown grains suffered more or less from lack of moisture. In some of the southeastern counties wheat sowing could not be completed on account of the drought, and some wheat that had sprouted died. Pastures continued very short in the central and eastern sections and there was a general scarcity of stock water.—*A. E. Hackett.*

Montana.—The mean temperature was 48.9°, or 4.9° above normal; the highest was 80°, at Lewistown on the 19th, and the lowest, 15°, at Yale on the 31st. The average precipitation was 0.35, or 0.69 below normal; the greatest monthly amount, 2.00, occurred at Corvallis, while none fell at Deer Lodge and Martinsdale.

The mean monthly temperature was the highest on record at the greater number of stations throughout the State and the precipitation was the least on record.—*E. J. Glass.*

Nebraska.—The mean temperature was 54.0°, or 3.5° above normal; the highest was 88°, at Culbertson on the 12th and 14th, Beaver City on the 18th, and Dawson on the 22d, and the lowest, 20°, at Tecumseh on the 14th, Red Cloud on the 17th, and Camp Clark on the 31st. The average precipitation was 1.64, or 0.08 above normal; the greatest monthly amount, 4.04, occurred at Strang, while none fell at Wallace.

Very favorable month for plowing and seeding, also for germination and growth of fall sown grain. An unusually large acreage of winter wheat has been sown and the entire crop is in fine condition. Corn husking progressed slowly, because the heavy rain in September and the first of October kept the corn too moist for cribbing. Corn seems to be yielding better than had been expected, but the grain is of poor quality.—*G. A. Loveland.*

Nevada.—The mean temperature was 50.7°, or 2.1° above normal; the highest was 90°, at Candelaria on the 15th, and the lowest, 17°, at Hamilton on the 31st. The average precipitation was 1.11, or 0.58 above normal; the greatest monthly amount, 2.22, occurred at Lewers Ranch, while none fell at Halleck and Hawthorne.

The weather during the greater part of the month was fine and pleasant, and very favorable for gathering late crops and for fall plowing. The range feed throughout the State was fairly good and livestock was in good condition.—*J. H. Smith.*

New England.—The mean temperature was 49.8°, or 1.7° above normal; the highest was 82°, at Provincetown, Mass., on the 13th and the lowest, 15°, at Jacksonville, Vt., on the 28th and Grafton, N. H., on the 29th. The average precipitation was 2.98, or 0.64 below normal; the greatest monthly amount, 6.55, occurred at Mount Tom, Mass., and the least, 0.44, at Nantucket, Mass.

The weather of the month was exceptionally pleasant, there being seventeen clear days. The fair weather was very favorable to farm operations and outdoor work generally. Crops harvested in good condition; little damage from frost.—*J. W. Smith.*

New Jersey.—The mean temperature was 54.4°, or 0.5° above normal; the highest was 82°, at Indian Mills on the 10th and at Bridgeton on the 23d, and the lowest, 21°, at Layton on the 26th. The average precipitation was 1.93, or 1.75 below normal; the greatest monthly amount, 4.45, occurred at River Vale and the least, 0.87, at Cape May.

All farming operations well advanced; fall seeding completed and that sown early is up and growing nicely. First killing frost did not occur until the 26th, too late to do any damage, as all crops were safely housed prior to that date.—*E. W. McGann.*

New Mexico.—The mean temperature was 55.8°, or 1.4° above normal; the highest was 99°, at Carlsbad on the 2d, and the lowest, 22°, at Blue-

water on the 15th. The average precipitation was 1.57, or 0.30 above normal; the greatest monthly amount, 3.15, occurred at Strauss, while none fell at Raton.

Late fall crops harvested under favorable conditions. Grass well cured and prairies well watered, insuring good fall and winter feed for stock.—*R. M. Hardinge.*

New York.—The mean temperature was 49.7°, or about normal; the highest was 79°, at New Rochelle on the 4th, Catskill on the 23d, and Appleton on the 30th, and the lowest, 17°, at New Lisbon on the 26th and Axton on the 29th. The average precipitation was 2.03, or 0.43 below normal; the greatest monthly amount, 5.24, occurred at Southeast Reservoir, and the least, 0.59, at Romulus.

The month was very favorable for farm operations, all crops having been saved without material damage from frost; heavy snow fell in parts of the northern portion on the 18th; wheat and rye were seeded later than usual, and dry weather prevented quick germination, but the early planted winter grain is very promising; considerable rotting of potatoes was reported.—*R. G. Allen.*

North Carolina.—The mean temperature was 58.9°, or 0.2° above normal; the highest was 90°, at Tarboro on the 2d, and the lowest, 24°, at Linville on the 5th. The average precipitation was 1.63, or 2.06 below normal; the greatest monthly amount, 3.80, occurred at Southport, and the least, trace, at Salisbury.

The weather was generally very favorable for gathering crops, but the drought during the last half of the month rather interfered with plowing and seeding winter crops. A good deal of top cotton opened during the favorable weather and picking made rapid progress. The yield of both cotton and corn proved far less than expected. A good rain is now needed to start the growth of winter wheat. The damage by frost was small.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 47.5°, or 5.5° above normal; the highest was 88°, at University on the 22d, and the lowest, 11°, at Cando on the 31st. The average precipitation was 1.61, or 0.42 above normal; the greatest monthly amount, 3.83, occurred at Fargo, and the least, trace, at Willow City.

The precipitation was considerably in excess of the usual amount in the eastern portion of the State, where the bulk of the wheat crop is grown, and interfered very seriously with thrashing, which was in progress there. Considerable grain was damaged by rain while in the stack, and, taken altogether, the weather was generally unfavorable for farm work, except for about ten days toward the close of the month.—*B. H. Bronson.*

Ohio.—The mean temperature was 53.8°, or 1.2° above normal; the highest was 88°, at Lima on the 29th, and the lowest, 20°, at Coalton on the 18th. The average precipitation was 0.73, or 1.33 below normal; the greatest monthly amount, 4.00, occurred at Montpelier, and the least, trace, at Cambridge, Demos, and Thurman.

The temperature was generally above normal. Cool weather prevailed from the 3d to 7th and from the 14th to 18th; freezing temperature occurring all over the State on the 18th. There was a marked deficiency in precipitation. In the southeast many wells are dry and stock water scarce, with pastures in poor condition. Corn became very dry the last of the month. Much wheat was sown during the month, but germination was much retarded by the drought. Hessian fly has attacked the early sown in some central and southern counties. Potatoes were practically uninjured by the cold weather; apples secured in good condition with light crop.—*J. Warren Smith.*

Oklahoma and Indian Territories.—The mean temperature was 65.4°, or 2.5° above normal; the highest was 99°, at Webber Falls, Ind. T., on the 1st, and the lowest, 27°, at Blackburn, Ind. T., on the 14th. The average precipitation was 1.99, or 0.66 below normal; the greatest monthly amount, 4.75, occurred at Holdenville, Ind. T., and the least, 0.28, at Arapaho, Okla.

Weather favorable during month for seeding wheat and picking cotton. Wheat about sown and up to good stand, with early sown being pastured; the crop needs rain to place it in condition to withstand the winter season. Cotton about two-thirds picked. Rye and oats sown doing well. Stock in fair condition, but water scarce.—*Charles M. Strong.*

Oregon.—The mean temperature was 56.4°, or 4.7° above normal; the highest was 92°, at Toledo on the 13th, and the lowest, 18°, at Vale on the 31st. The average precipitation was 1.60, or 1.36 below normal; the greatest monthly amount, 6.20, occurred at Nehalem, and the least, trace, at Blalock and Umatilla.

The weather during the month was exceptionally favorable for farm work in general, especially fall plowing and seeding. Winter wheat, oats, and rye germinated nicely, and an excellent stand is reported from all sections in the State. Range grass and pastures maintained a satisfactory growth throughout the month. Winter apples matured well and some picking was done; the crop is below the average.—*Edward A. Beale.*

Pennsylvania.—The mean temperature was 52.2°, or 1.2° above normal; the highest was 83°, at California on the 11th, and the lowest, 20°, at Center Hall on the 7th, Grampian on the 22d, and Somerset on the 24th. The average precipitation was 1.23, or 2.05 below normal; the greatest monthly amount, 3.35, occurred at Pocono Lake, and the least, 0.23, at Elwood Junction.

The month was exceptionally favorable for the maturing and harvesting of late crops, the completion of fall seeding, and general farm work. On account of rot potatoes were a partial failure in most sections, otherwise good yields were obtained from all staple crops and most of the minor ones. In a few localities the soil was too dry for plowing and the germination of late seeding. Early sown grain had a good stand and a satisfactory start. The damage to crops by frost was very slight.—*T. F. Townsend.*

Porto Rico.—The mean temperature was 79.2°, or 0.8 above normal; the highest was 96°, at Cayey on the 8th and at Fajardo on the 9th, and the lowest, 59°, at Adjuntas on the 22d. The average precipitation was 11.46, or 2.03 above normal; the greatest monthly amount, 19.84, occurred at Isolena, and the least, 3.36, at Yauco.

The rainfall for the month was quite general and decidedly above the normal, except during the second decade. The excessive rains seriously retarded field work especially toward the close of the month, and caused some loss of rice and damage to tobacco seed beds and smaller crops. The growing crops of cane, corn, and rice, made satisfactory progress, while the gathering of the coffee crop was carried on with activity. All maturing crops are giving good yield. The new orange crop is being marketed. There was a scarcity in some portions of the island of a few of the minor fruits and small crops such as plantains, beans, sweet potatoes, etc.—*E. C. Thompson.*

South Carolina.—The mean temperature was 62.4°, or 1.6° below normal; the highest was 92°, at Seivern on the 1st, and the lowest, 29°, at Seivern on the 19th. The average precipitation was 0.89, or 2.33 below normal; the greatest monthly amount, 2.86, occurred at Trenton, and the least, trace, at Georgetown.

Extremely favorable weather for gathering ripe crops, but generally too dry for plowing and for seeding oats. Oats sown early in the month came up to good stands; those sown after the 15th failed to germinate well. Cotton picking progressed rapidly, and was nearly finished over the eastern counties, but much remains to pick and to open over the western counties. Frost was general from the 16th to the 19th, generally light, but heavy to killing over the south-central counties.—*J. W. Bauer.*

South Dakota.—The mean temperature was 52.0°, or 4.0° above normal; the highest was 89°, at Leola on the 21st, and the lowest, 15°, at Ashcroft on the 3d. The average precipitation was 1.71 or 0.64 above normal; the greatest monthly amount, 4.70, occurred at Oelrichs, and the least, 0.49, at Cherry Creek.

Fall plowing and the seeding, germination, and growth of winter rye progressed very satisfactorily. At the close of the month thrashing was nearing completion; corn picking was general, with probably one-fourth of the corn in crib; plowing was unusually advanced; winter rye showed fine stand and was in excellent condition; fall pasturage was good, and live stock was generally in good condition.—*S. W. Glenn.*

Tennessee.—The mean temperature was 58.7°, or 0.2° below normal; the highest was 92°, at Dyersburg on the 2d, and the lowest, 25°, at Rugby on the 15th. The average precipitation was 1.53, or 0.92 below normal; the greatest monthly amount, 3.55, occurred at Dyersburg, and the least, 0.47, at Kingston.

Exceptionally favorable weather prevailed throughout the month and farm work was much further advanced than usual. Tobacco was housed in fine condition; cotton opened well and picking was kept up; the gathering of corn was in full progress; seeding of winter grains progressed favorably and seed was well put in; early sown wheat was up and growing well; immense forage crops were housed. The light frosts of the month were not injurious.—*H. C. Bates.*

Texas.—The mean temperature was 70.2°, or 2.0° above normal; the highest was 101°, at Fort McIntosh on the 12th, and the lowest, 32°, at Anna on the 14th. The average precipitation was 1.69, or 0.62 below normal; the greatest monthly amount, 15.00, occurred at Galveston, while none fell at Cotulla, Fort Clark, Fort McIntosh, Menardville, and Rockport.

Conditions were generally favorable during the month for securing crops, but in many sections the ground was too dry for sowing of grain. A drought of considerable severity prevailed over the greater portion of the western half of the State. Cotton picking at the close of the month was practically completed, except on bottom lands. Rice harvesting and cane cutting and grinding made rapid progress. Gardens and truck backward and in need of moisture.—*Edward H. Bowie.*

Utah.—The mean temperature was 51.7°, or 3.8° below normal; the highest was 93°, at St. George on the 2d, and the lowest, 5°, at Woodruff on the 22d. The average precipitation was 1.04, or 0.20 above normal; the greatest monthly amount, 2.81, occurred at Corinne, while none fell at Cisco.

It was probably the warmest October since 1876. Potato digging was completed, but sugar beet digging was still in active progress at the close of the month. The general rains during the last week caused fall sown grain to germinate nicely.—*L. H. Murdoch.*

Virginia.—The mean temperature was 56.5°, or about normal; the highest was 88°, at Barboursville on the 11th, and the lowest, 21°, at Burkes Garden on the 5th. The average precipitation was 1.19, or 2.12 below normal; the greatest monthly amount, 3.15, occurred at Williamsburg, and the least, 0.10, at Farmville and Manassas.

The weather was generally bright and beautiful throughout the

month, and the growth of crops very good. Owing, however, to the lack of rain, the soil became hard and refractory, delaying fall plowing and other preparation for late seeding, and retarding germination of recently seeded fields of wheat and oats.—*Edward A. Evans.*

Washington.—The mean temperature was 54.8°, or 5.3° above normal; the highest was 87°, at Pasco on the 20th, and the lowest, 21°, at Northport on the 13th. The average precipitation was 2.12, or 0.68 below normal; the greatest monthly amount, 10.71, occurred at Clearwater, while none fell at Pasco.

The phenomenally warm and pleasant weather was very favorable for plowing, thrashing, and gathering fall crops. The yield of oats was large, and the wheat yield heavy beyond expectations. The potato and apple crops were short. September sown wheat made good growth, but October sown did not germinate well until the close of the month. Pastures were greatly improved by the rain that fell during the last week, and the condition of the soil was greatly improved.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 54.3°, or 0.7° below normal; the highest was 86°, at Powellton on the 1st, and the lowest, 19°, at Philippi on the 25th. The average precipitation was 0.54, or 1.68 below normal; the greatest monthly amount, 1.60, occurred at Princeton, and the least, 0.12, at Dayton.

The clear, dry weather, with cool nights and warm days, was favorable for farm work of all kinds, which was well up to date at the close of the month. Corn cutting progressed well and some corn was husked, although it was rather too dry for this work. Apples had all been gathered with below average yield, except in the panhandle section,

where an average crop of good quality was raised. Pastures were short and dried up, but stock was doing fairly well. Water in streams, and in wells in some cases, was getting scarce. Plowing for wheat was mostly completed, and wheat was about all sown, but was not germinating very well on account of lack of moisture.—*E. C. Voss.*

Wisconsin.—The mean temperature was 50.7°, or 2.5° above normal; the highest was 86°, at Racine on the 1st, and the lowest, 12°, at North Crandon on the 28th. The average precipitation was 2.60, or 0.24 above normal; the greatest monthly amount, 5.49 occurred at Menasha, and the least, 0.65, at Milwaukee.

The month was mild and equable throughout, and favorable for the completion of fall work. Plowing, husking, and potato digging were generally completed by the end of the month. The rains during the second week were very beneficial to fall grains and pastures. Winter wheat and rye made good growth and are now generally in good condition.—*W. M. Wilson.*

Wyoming.—The mean temperature was 47.6°, or 2.9° above normal; the highest was 86°, at Bitter Creek on the 5th, and the lowest, 10°, at Daniel on the 31st. The average precipitation was 0.76, or 0.04 below normal; the greatest monthly amount, 1.82, occurred at Evanston, and the least, 0.05, at Hyattville.

The month was unusually favorable for stock, and special reports from correspondents indicate that in nearly every section the outlook for the winter is exceptionally bright. The range feed is better than the average, stock now in first-class condition, and the supply of hay on hand is probably greater than ever before in the history of the State.—*W. S. Palmer.*

SPECIAL CONTRIBUTIONS.

CLIMATOLOGY OF COSTA RICA.

Communicated by H. PITRIER, Director, Physical Geographic Institute.

TABLE 1.—Hourly observations at the Observatory, San Jose de Costa Rica, during October, 1901.

Hours.	Pressure.		Temperature.		Relative humidity.		Rainfall.		
	Observed, 1901.	Normal, 1889-1900.	Observed, 1901.	Normal, 1889-1900.	Observed, 1901.	Normal, 1889-1900.	Observed, 1901.	Normal, 1889-1900.	Duration, 1901.
	660+ Mm.	660+ Mm.	° C.	° C.	%	%	Mm.	Mm.	Hrs.
1 a. m.	3.47	3.14	17.19	17.81	94	95	2.0	4.2	2.17
2 a. m.	3.22	3.74	16.96	17.18	94	95	0.7	3.7	2.00
3 a. m.	3.06	3.56	16.73	16.93	95	95	0.5	3.2	1.17
4 a. m.	3.03	2.59	16.60	16.82	94	95	0.4	2.3	2.59
5 a. m.	3.12	2.86	16.33	16.65	95	95	0.3	1.8	1.50
6 a. m.	3.46	3.29	16.50	16.61	94	94	0.1	1.6	0.50
7 a. m.	3.81	3.86	17.84	17.81	89	90	0.0	2.0	0.00
8 a. m.	4.07	3.89	19.55	19.52	82	83	1.9	1.8	1.00
9 a. m.	4.35	4.16	22.02	21.73	72	78	0.2	0.8	0.67
10 a. m.	4.36	4.14	23.85	23.54	67	71	0.0	0.5	0.00
11 a. m.	3.97	3.72	24.61	24.48	66	70	0.1	0.8	0.33
12 m.	3.54	3.16	24.67	24.53	67	71	0.9	2.8	1.00
1 p. m.	2.71	2.53	24.16	24.13	70	72	6.8	6.9	1.50
2 p. m.	2.30	2.11	22.94	22.26	74	76	36.4	18.9	4.11
3 p. m.	2.12	1.82	21.73	21.95	80	81	89.9	35.9	8.67
4 p. m.	2.26	2.03	20.75	20.70	81	86	66.4	42.1	10.08
5 p. m.	2.58	2.38	19.65	19.80	87	88	99.5	50.5	10.76
6 p. m.	3.01	2.76	19.80	19.10	92	92	79.5	49.5	14.24
7 p. m.	3.47	3.34	18.68	18.67	98	98	38.7	47.0	12.99
8 p. m.	3.79	3.73	18.44	18.43	98	98	16.9	24.3	10.66
9 p. m.	4.15	3.92	18.27	18.22	98	94	12.7	15.4	6.84
10 p. m.	4.21	4.06	18.00	17.98	98	94	11.9	12.0	6.42
11 p. m.	4.16	3.91	17.79	17.59	98	94	6.8	8.8	5.00
Midnight	3.85	3.57	17.41	17.54	94	95	5.3	5.9	4.83
Mean	663.42	663.17	19.56	19.61	86	91			
Minimum	660.60	659.63	14.5	13.4	55				
Maximum	665.90	666.12	23.7	23.3	100		21.6		
Total							478.0	347.2	108.53

REMARKS.—The barometer is 1,169 meters above sea level. Readings are corrected for gravity, temperature, and instrumental error. The dry and wet bulb thermometers are 1.5 meters above ground and corrected for instrumental errors. The hourly readings for pressure, wet and dry bulb thermometers, are obtained by means of Richard registering instruments, checked by direct observations every three hours from 7 a. m. to 10 p. m. The hourly rainfall is as given by Hottinger's self-register, checked once a day. Under maximum, the greatest hourly rainfall for the month is given. The standard rain gage is 1.5 meters above ground. In the Costa Rican system the San Jose local time is used, which is 0° 36' 13" slower than seventy-fifth meridian time.

TABLE 2.

Time.	Sunshine.		Temperature of the soil at depth of—					Cloudiness observed, 1901.
	Observed, 1901.	Normal, 1889-1900.	0.15 m.	0.30 m.	0.60 m.	1.20 m.	3.00 m.	
	Hours.	Hours.	° C.	° C.	° C.	° C.	° C.	%
7 a. m.	7.65	6.01	21.46	21.43	22.06	21.90	21.57	68
8 a. m.	15.59	17.68						
9 a. m.	20.92	20.99						
10 a. m.	20.33	20.90	21.47	21.48	22.10	21.93		70
11 a. m.	17.15	18.58						
12 m.	14.59	14.09						
1 p. m.	7.14	11.39	21.88	21.66	22.12	21.91		84
2 p. m.	8.66	10.87						
3 p. m.	5.49	8.35						
4 p. m.	3.76	4.73	21.66	21.68	22.04	21.87		94
5 p. m.	1.58	1.55						
6 p. m.	0.17	0.22						
7 p. m.			21.75	21.67	22.05	21.86		88
8 p. m.								
9 p. m.								
10 p. m.			21.62	21.64	22.04	21.86		78
11 p. m.								
Midnight								
Mean			21.63	21.63	22.05	21.87	21.57	77
Total	123.02	135.65						

Notes on the weather.—Rains have been rather excessive on the Pacific slope and in the mountains of the central range. On the Atlantic coast belt the remarkable drought which has prevailed through several months seems to have come to an end. At San Jose there was a short period of summer (*verano*) from the 8th to the 14th, with only occasional showers and fresh northeasterly breezes.

Earthquakes at San Jose.—October 1, 11^h 20^m 42^s a. m., slight shock, NNW-SSE, intensity II, duration 6 seconds; 8^h 50^m p. m., slight shock, NNW-SSE, intensity II, duration 12 seconds. October 2, 2^h 49^m 11^s a. m., very light tremors, apparently NNW-SSE, intensity I, duration 6 seconds. October 3, 6^h 28^m 40^s a. m., light shock, W-E, intensity I, duration inappreciable. October 7, 8^h 12^m 0^s p. m., light shock, NNW-SSE, intensity I, duration 4 seconds; 8^h 26^m 33^s p. m., strong and prolonged shock, NNW-SSE, intensity III, duration 21 seconds; 8^h 27^m 30^s p. m., strong shock, NNW-SSE, intensity IV, duration 12 seconds; 8^h 33^m 27^s p. m., slight shock, NNW-SSE, intensity II, duration 6 seconds. October 14, 10^h 30^m a. m., slight shock, NNE-SSW, intensity II, dura-